Dholakia, Umesh

From: Dholakia, Umesh
Sent: Thursday, March 21, 2013 11:21 AM
To: 'Angel Berrios'
Cc: beatriz.rivera@essroc.com; Steve Cullen
Subject: ESSROC-Biomass-Non-app conditions (Draft)
Attachments: ATTACHMENT to EPA Response-March2013.docx

Hi! Angel:

The PSD non-app conditions that will go along with ESSROC's PSD non-app for using biomass is attached here for you to take a look at and comment on its accuracy. This is a courtesy review of my draft. Please respond as soon as you can- I plan to finalize this early next week.

Thanks.

Umesh

ATTACHMENT

ESSROC San Juan, Inc. Dorado, Puerto Rico (March, 2013)

PSD Non-Applicability Conditions

ESSROC proposes to combust biomass as an additional fuel in its cement kiln no. 3. ESSROC currently combusts coal and oil to produce 682,500 tons of clinker and estimates that its maximum heat input requirement will be 1750 Btu/lb of clinker produced.

ESSROC will apply to PREQB to incorporate the following conditions in its title V and/or a permit to construct- PREQB may streamline permit conditions where appropriate:

1. ESSROC shall only use coal, waste oil and biomass as fuels in its cement kiln, aka kiln no. 3. Biomass use shall be permitted up to a maximum of 35% of the Btu heat input and 70,000 tons per year on a 12-month rolling basis.
2. ESSROC's 12-month (yearly) emissions on a monthly rolling basis shall be limited and monitored as follows [ESSROC shall also comply with any short term emission limits established in any other part of any EQB permit]-

	Tons/Year	Emission Factor (EF)	Monitoring
Sulfur Dioxide	324	Fuel Sulfur Content	CEM
Nitrogen Oxides	922	3.18 lbs/ton of clinker	CEM
Carbon Monoxide	1113	3.84 lbs/ton of clinker	CEM
PM-10/PM 2.5	99	0.34 lbs/ton of clinker	Clinker production x EF
VOC	41	0.14 lbs/ton of clinker	Clinker production x EF

3. Biomass fuel sulfur content shall not exceed 0.6%.
4. ESSROC shall use EPA approved performance test methods to verify the emission factors while burning biomass at 35% heat input. These tests shall be conducted within 180 days of the permit issuance or whenever the biomass is introduced first time.
5. All emissions data collected with the CEMs and calculations shall be maintained for five years. ESSROC shall also monitor and record daily clinker production, daily consumption of each fuel, its sulfur content and each fuel's heat input.
6. For this permit, biomass includes regular biomass, clean and other cellulosic biomass and bio-solids. Regular biomass is defined as non-fossilized and biodegradable organic material originating from plants, animals or micro-organisms, including products, by-

products, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material. Clean cellulosic is defined as residuals that are akin to traditional cellulosic biomass such as forest-derived biomass (*e.g.,* green wood, forest thinnings, clean and unadulterated bark, sawdust, trim, and tree harvesting residuals from logging and sawmill materials), corn stover and other biomass crops used specifically for energy production (*e.g.,* energy cane, other fast growing grasses), bagasse and other crop residues (*e.g.,* peanut shells), wood collected from forest fire clearance activities, trees and clean wood found in disaster debris, clean biomass from land clearing operations, and clean construction and demolition wood. These fuels are not secondary materials or solid wastes unless discarded. Clean biomass is biomass that does not contain contaminants at concentrations not normally associated with virgin biomass materials. Other cellulosic biomass is a category that does not comply with the definition of untreated cellulosic biomass. These include discarded consumer products and wood residues from non-primary mill manufacturers, wooden furniture, cabinets, pallets and containers, and scrap lumber. Bio-solids are defined as organic materials sanitized to meet EPA Class A sanitization standards and are derived from treatment processes of public treatment water systems Class A bio-solids and comply with the requirements established on 40 CFR Part 503.

7. ESSROC shall sample and analyze each fuel received in a manner consistent with the industry standards and any other requirements in this permit.
8. Each delivery from a biomass supplier must be accompanied by a supplier document or manifest, including the date of delivery, and certifying that the biomass is free of plastic, paint, stain, coatings, and wood preservatives. ESSROC shall keep records of these manifests for a period of five years. ESSROC shall inspect the incoming biomass to ensure that it meets these requirements.
9. ESSROC shall store biomass under cover or in covered trailers, containers or buildings, on top of a paved or compacted clay surface to ensure that the heating value of the biomass is not reduced due to high water content and that there is no runoff contamination.
10. Biomass shall be introduced after the kiln has achieved normal operation, temperature and production and will be introduced in the high-temperature combustion zone of the main kiln burner. ESSROC shall make every effort during the shakedown and assessment periods to promote efficient combustion and minimize emissions.

ESSROC provided conditions

Essroc would want to maintain the higher permitted production limit of 682,550 clinker burning only coal or fuel oil in a given year; and just use the 579,763 limit if burning alternative fuels. The following are recommendations for monitoring, recordkeeping and reporting.

Monitoring:

- Daily Clinker production while burning coal or fuel oil (calculated from feed, unless clinker production is monitored)
- Daily Clinker production while burning alternative fuels (calculated from feed, unless clinker production is monitored)
- Daily Heat input from each type of fuel burned

Recordkeeping:

- Monthly Clinker production while burning coal or fuel oil (calculated from feed, unless clinker production is monitored)
- Monthly Clinker production while burning alternative fuels (calculated from feed, unless clinker production is monitored)
- Monthly Heat input from each type of fuel burned

Reporting:

- Quarterly Clinker production while burning coal or fuel oil (calculated from feed, unless clinker production is monitored)
- Quarterly Clinker production while burning alternative fuels (calculated from feed, unless clinker production is monitored)

Therefore, with a permit limit of 70,000 tons of AF per year Essroc will not trigger the PSD applicability threshold.

The following are suggestions regarding the recordkeeping and monitoring requirements:

I. Definitions:

Alternative Fuels includes the following:

a. Biomass is defined as non-fossilized and biodegradable organic material originating from plants, animals or micro-organisms, including products, by-products, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material.

b. Clean cellulosic biomass is defined as residuals that are akin to traditional cellulosic biomass such as forest-derived biomass (*e.g.*, green wood, forest thinnings, clean and unadulterated bark, sawdust, trim, and tree harvesting residuals from logging and sawmill materials), corn stover and other biomass crops used specifically for energy production (*e.g.*, energy cane, other fast growing grasses), bagasse and other crop residues (*e.g.*, peanut shells), wood collected from forest fire clearance activities, trees and clean wood found in

disaster debris, clean biomass from land clearing operations, and clean construction and demolition wood. These fuels are not secondary materials or solid wastes unless discarded. Clean biomass is biomass that does not contain contaminants at concentrations not normally associated with virgin biomass materials.

c. Other Cellulosic biomass is a category that does not comply with the definition of untreated cellulosic biomass. These include discarded consumer products and wood residues from non-primary mill manufacturers, wooden furniture, cabinets, pallets and containers, and scrap lumber.

d. Biosolids: is defined as organic materials sanitized to meet EPA Class A sanitization standards and is derived from treatment processes of public treatment water systems
Class A biosolids and comply with the requirements established on 40 CFR Part 503.

II. Emission Unit EU501 (Kiln 3)

A. Monitoring Requirements

1. Essroc shall not burn or permit the use of fuels with a sulfur content not exceeding 0.6% by weight for AF1[1].

2. Essroc shall not exceed the consumption limit of 70000 tons of biomass per year for unit EU501 for any consecutive 12 month rolling period. The biomass consumption for any consecutive 12 month period shall be calculated by adding the monthly consumption to the total biomass consumption for the previous 11 months.

3. Subject to the alternative fuel acceptance criteria, Essroc is authorized to co-fire authorized fuels.

III. Area of Receiving Alternative Fuel:

A. For alternative received Essroc shall comply with the following requirements.

1. All alternative fuel materials received at the plant shall be in covered trucks and/or enclosed containers. When unloading and handling alternative fuel, Essroc shall take reasonable precautions to prevent fugitive dust emissions.

2. Essroc shall record the amount the category, type and amount of each alternative fuel received.

3. Each alternative fuel material received shall be sampled and analyzed in a manner consistently with industry standards for quality assurance and quality control to ensure that representative data is collected. Essroc shall obtain the analytical results of a representative sample of the alternative fuel prior to the initial delivery, quarterly for the first year, and if the analysis meets permit requirements the frequency of sampling and analysis shall be annual every January thereafter, if that material is present. All records and results of the analysis will be maintained at the facility as required for currently permitted fuels.

4. Fuel Analyses Parameters: The following information shall be included when reporting the analytical results for an AF: higher heating value (Btu/lb) of AF; moisture, ash, volatiles, fixed carbon, sulfur and chlorine content (percent by weight); arsenic, beryllium, cadmium, chromium, lead, and mercury contents (ppm). All concentrations are on a dry basis.

B. The alternative fuel shall be stored:

1. Under cover or in covered trailers, containers or buildings;
2. On top of a paved or compacted clay surface; and
3. By Best Management Practices to promote containment and prevent contamination of air, water and soil.

IV. Sampling and Analysis

A. Sampling Criteria:

1. Each alternative fuel material received shall be sampled and analyzed in a manner consistent with industry standards for quality assurance and quality control to ensure that representative data is collected. At a minimum, the frequency of sampling and analysis shall be consistent with the frequency of sampling and analysis of coal. All records and results of the analysis shall be maintained at the facility as required for currently permitted fuels.

2. Essroc shall use the following analytical methods to determine the composition of the AF.

Parameter	**Analytical Methods**
Moisture, Volatiles, Ash and Fixed Carbon	Proximate Analysis appropriate for given fuel
Carbon, Hydrogen, Nitrogen Sulfur and Oxygen	Ultimate Analysis appropriate for given fuel

Heating Value	ASTM E711 - 87(2004) Standard Test Method for Gross Calorific Value of Refuse-Derived Fuel by the Bomb Calorimeter, or ASTM D5468 - 02(2007) Standard Test Method for Gross Calorific and Ash Value of Waste Materials, or
Proximate Analysis appropriate for given fuel	
Chlorine	EPA SW-846 or EPA Method 9056
Mercury	EPA 7470A/7471A
Other Metals	EPA SW-846 or EPA Method 6010B

V. Performance Requirements

A. Operation: Alternative fuels shall only be fired once the kiln has achieved normal operation, temperatures and production (i.e., when raw materials are introduced).

B. Alternative Fuels shall be introduced only in the high-temperature combustion zones of the main kiln burner.

C. Essroc shall make every effort during the shakedown and assessment periods to promote efficient combustion and minimize emissions impacts.

D. Essroc shall discontinue firing alternative fuel if one of the CEMS, COMS or other continuous monitors indicates a non-compliance issue related to alternative fuels.

The idea is to maintain the same requirements established in the permits issued to Essroc for coal and oil. The approach used in the construction and Title V permit is to establish the amount of fuel that is need for the production of clinker. As stated above the plans are to substitute up to 35 percent of the current fuels used at the facility. The following information will provide you with the percent of substitution of fossil fuel.

Type Fuel	Total Fuel (ton/year)	Average Heat Content (MMBtu/ton)	Total Heat Input for Clinker Production (MMBTU/year)	Percent Substitution
Coal	90000	22	1980000	35%
Biomass	70000	10	700000	

Type Fuel	Total Fuel (ton/year)	Average Heat Content (MMBtu/ton)	Total Heat Input for Clinker Production (MMBTU/year)	Percent Substitution
Oil	69657	34	2368338	30%
Biomass	70000	10	700000	